

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

IN THE CLAIMS

1. (CURRENTLY AMENDED) An apparatus for evaluating a structure and function of a tissue-engineered construct under sterile conditions, said apparatus comprising:
 - (a) a base for supporting the tissue-engineered construct, said base including a housing having an inlet port and an outlet port;
 - (b) a main fluid circuit for allowing flow of a fluid media through said housing, said main fluid circuit having an efferent section in fluid communication with said outlet port and an afferent section in fluid communication with said inlet port;
 - (c) pressure means in fluid communication with said main fluid circuit for generating physiologic flow of the fluid media through said main fluid circuit;
 - (d) resistance means in fluid communication with said main fluid circuit for replicating an afterload characteristic, said resistance means positioned distal to the tissue-engineered construct on said efferent section of said main circuit; and
 - (e) auxiliary fluid circuit in fluid communication with said main fluid circuit to allow for regurgitant flow of said fluid media through said main fluid circuit; and

- (e)(f) control means in electronic communication with said pressure means for adjustably controlling the pressure of the fluid media in said main fluid circuit at a level which replicates intraluminal flow, wherein said intraluminal flow of said fluid through said main fluid circuit hemodynamically conditions the tissue-engineered construct prior to *in vivo* implantation in a ventricular outflow tract.
2. (CANCELED)
 3. (CURRENTLY AMENDED) The apparatus according to claim 2 1, wherein said auxiliary fluid circuit includes a check valve for allowing unidirectional flow through said auxiliary fluid circuit.
 4. (ORIGINAL) The apparatus according to claim 1, wherein said pressure means is a pump.
 5. (ORIGINAL) The apparatus according to claim 4, wherein said pump is in fluid communication with said housing at a region upstream of said housing.
 6. (ORIGINAL) The apparatus according to claim 5, wherein said pump includes a check valve.
 7. (ORIGINAL) The apparatus according to claim 6, wherein said pump is a piston-driven pump.
 8. (ORIGINAL) The apparatus according to claim 6, wherein said pump is a bellows pump.
 9. (ORIGINAL) The apparatus according to claim 1, wherein said housing is hermetically sealed.
 10. (ORIGINAL) The apparatus according to claim 9, wherein said housing is composed of a transparent material.

11. (ORIGINAL) The apparatus according to claim 10, wherein said transparent material comprises an acrylic polymer.
12. (ORIGINAL) The apparatus according to claim 1, wherein said control means comprises a computer.
13. (ORIGINAL) The apparatus according to claim 1, wherein said resistance means comprises an afterload device and a section of said efferent section comprises compliant tubing having elastic recoil.
14. (CURRENTLY AMENDED) The apparatus according to claim 1, wherein ~~said afterload device~~ said resistance means generates pressure which substantially replicates aortic pressure.
15. (CURRENTLY AMENDED) The apparatus according to claim 1, further comprising a compressible container placed in fluid communication with said housing for allowing radial movement of the ~~semilunar valve~~ said tissue-engineered construct during the flow of said fluid media through said main fluid circuit.
16. (CURRENTLY AMENDED) The apparatus according to claim ~~14~~ 15, wherein said container comprises a closed bag compliance reservoir.
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32. (NEW) An apparatus for evaluating a structure and function of a tissue-engineered construct under sterile conditions, said apparatus comprising:
 - (a) a base for supporting the tissue-engineered construct, said base including a housing having an inlet port and an outlet port;
 - (b) a main fluid circuit for allowing flow of a fluid media through said housing, said main fluid circuit having an efferent section in fluid communication with said outlet port and an afferent section in fluid communication with said inlet port;
 - (c) pressure means in fluid communication with said main fluid circuit for generating physiologic flow of the fluid media through said main fluid circuit;
 - (d) resistance means in fluid communication with said main fluid circuit for replicating an afterload characteristic, said resistance means positioned

distal to the tissue-engineered construct on said efferent section of said main circuit;

- (e) compressible container placed in fluid communication with said housing for allowing radial movement of the said tissue-engineered construct during the flow of said fluid media through said main fluid circuit; and
 - (f) control means in electronic communication with said pressure means for adjustably controlling the pressure of the fluid media in said main fluid circuit at a level which replicates intraluminal flow, wherein said intraluminal flow of said fluid through said main fluid circuit hemodynamically conditions the tissue-engineered construct prior to *in vivo* implantation in a ventricular outflow tract.
33. (NEW) The apparatus according to claim 32, wherein said container comprises a closed bag compliance reservoir.